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ABSTRACT

This study investigated the effects of an intervention--audio-cuing--on teaching behaviors of a male elementary school physical education teacher with five years of teaching experience. The audio-cuing intervention was applied by way of a micro-cassette recorder that was concealed in the teacher's clothing. Cues were prerecorded and could be heard only by the teacher through a mini-earphone. The subject was videotaped over a period of 18 class sessions during one year; activities taught ranged from locomotor skills, manipulative skills, elementary games, and year-end fitness testing. Tapes were analyzed to study the teacher's use of positive general behavior feedback and positive specific skill (motor skills) feedback. Results indicated that audio-cuing as a primary intervention tactic can alter significantly the use of positive behavior feedback and positive specific skill feedback and that lasting effects of audio-cuing are variable across teaching behaviors. Changes in teaching behaviors can be established quickly and efficiently by way of audio-cuing, and audio-cuing can also alter at least two verbal teaching behaviors simultaneously. (CB)

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THE EFFECTS OF AUDIO-CUING ON SELECTED TEACHING BEHAVIORS OF AN EXPERIENCED ELEMENTARY PHYSICAL EDUCATION SPECIALIST

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Running head: Audio-Cuing Teaching Behaviors

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Over the past two decades of experimental research on teaching in physical education, efforts have been directed primarily at preservice teacher training. It is well established now that a variety of teaching behaviors of methods students and student teachers can be modified (Mancini, Wuest & van der Mars, 1985; Siedentop, 1981, 1986) using a variety of change agents (Locke, 1979). Until recently, little to no energy had been expended on (experimental) research within the inservice education realm of physical education (Locke, 1984). However, in an outgrowth of the supervision research program at Ohio State University Beamer (1983), Birdwell (1980), O'Sullivan (1983), and Whaley (1980) commenced efforts in working with experienced specialists. The behaviorally based interventions consisted of combinations of graphic feedback, goal setting, teacher selfgraphing, and instructional clinics. The results were mixed in changing selected teaching behaviors and students' (motor) engagement levels.

McKenzie (1981) successfully used goal-setting and feedback to change the use of positive specific skill feedback, students' first names, and "OK's" by an experienced (5 years) physical educator. Intervention effects in non-training settings and their longterm impact produced mixed results.

Ratliffe (1986) studied the effects of both traditional (i.e., subjective) supervisory techniques and systematic supervisory techniques on the percent of Management time and students' Motor-ALT accrual in classes taught by two elementary physical educators. Principals were used as change agents. Results showed that both dependent variables changed in the desired direction when the systematic supervisory techniques were in use.

The research program at Ithaca College also has expanded its scope by studying the effects of systematic supervisory feedback on experienced teachers' teaching behaviors (Stevens, Mancini & Frye, 1981); their interactions with disruptive children (Steffan, Mancini & Wuest, 1983); their level of burnout, and their students' academic learning time (Mancini, Wuest, Vantine & Clark, 1984).

Audio-cuing as an intervention tactic has been used successfully in regular Elementary classrooms to increase the use of teacher verbal praise, and student on-task behavior (Glynn & Thomas, 1974; Hall, Lund & Jackson, 1968; Van Houten & Sullivan, 1975). The same intervention significantly increased a student teacher's use of positive behavior feedback (i.e., praise for students' performance of managerial and transitional tasks) in Elementary physical education classes (van der Mars, 1985).

It has been argued that for in-service education efforts to have longterm impact the teachers themselves need to play a significant role in selecting areas of their work that need improvement. Anderson (1982) has indicated that "Most teachers know quite well what changes need to be made . . . The single most important contribution that outsiders can make is to help create an atmosphere that values and supports their efforts" (pp. 17-18).

The purpose of this study was to investigate the effects of audio-cuing on teaching behaviors of an experienced (5 years) Elementary physical educator. The teaching skills targeted for change were selected by the teacher.

Subject & Setting

A male physical education specialist with 5 years of experience served as subject. The subject was videotaped while teaching a second Grade class over a period of 18 class sessions spanning the winter and spring of 1985. The school in which this teacher was employed is located in a rural area in the state of Maine. The K-8 student population's economic background was described as lower to middle class. The activities taught ranged from locomotor skills, to manipulative skills, elementary games, to year-end fitness testing.

Target Behaviors/Intervention & Research Design

The teacher had shown an interest in increasing the use of two verbal interaction skills: a) use of positive behavior feedback. This was operationally defined as supportive verbal statements by the teacher that reflect a positive value judgment of all student behavior other than motor skill performance; and b) use of positive specific skill feedback. This was operationally defined as verbal responses made by the teacher concerning the motor skill attempts of students that reflect a positive value judgment and are aimed at a particular aspect of the students' performance (e.g., "Super tuck on that forward roll," or "Way to get those hips up high on that take-off").

The audio-cuing intervention was applied by way of a micro-cassette recorder. The teacher wore this recorder underneath the teaching attire. Cues were prerecorded on micro-cassettes (mean rates of 2 per minute) and could be heard only by the teacher through the use of a mini-earphone.

The intervention was introduced with the use of a multiple baseline design across teacher behaviors (Hersen & Barlow, 1976). Percent of class

time in Management served as a concurrent baseline. Use of this research design can determine the effectiveness of a particular intervention across behaviors, subjects, and/or settings. So as to familiarize the teacher with the planned intervention he previewed the cuetape each time a new cuetape with different cues was introduced. In addition, he was provided with a list of sample statements that were actual examples of the target teaching skills.

Data Collection & Analysis

The subject wore a cordless microphone allowing all verbal behavior to be recorded on the videotape records. Target behavior data were collected through event recording by charting their time of occurrence from a running stopwatch that was superimposed on the videotape as the classes were being recorded. Management time data were collected using interval recording. In addition to the 18 consecutive class sessions, video records were made of two more classes 6 months later so that Post-check data could be collected. Thus, lasting effects of the intervention could be determined.

Data were analyzed through visual inspection of graphic representations using criteria developed by Parsonson and Baer (1978): a) stability of baselines; b) overlap of data; c) variability within-, and across experimental phases; d) trends within-, and across experimental phases; and e) changes in level.

Observer Reliability

For each variable studied, four videotapes were randomly selected at the conclusion of the study. The unmarked tapes were then recoded by the investigator. For data collected through event recording a disagreement was counted if/when occurrences in one of the two observations had not been

coded, and/or if there was more than a 1 second difference between the two observations. For the Management time data, the Scored-Interval method was used to determine the agreement between observations. The resulting agreement percentages for all three variables ranged between 93.2% and 97.5%.

The major results of this project are displayed in Figure 1. Data patterns are depicted across Baseline, Intervention, and Post-check phases. Following a stable baseline around a mean rate of .37 positive behavior feedback was the first behavior cued for increased usage. Session seven produced a significant change in level from session six of 1.74. During the intervention phase the mean rate was increased to 1.22 (a 229% increase). The pattern of this behavior during intervention followed a gradually decreasing trend. But no overlap of data occurred between baseline and intervention phases.

Figure 1 about here

Positive specific skill feedback usage was cued first following the ninth session after baseline data showed consistent low rates of occurrence around a downward trend. The mean rate of occurrence during baseline was .30. This was increased to 1.80 (a 500% increase) during the audio-cuing phase. Despite considerable variability in this phase the trend line is directed upward. The change in level from session 9 to 10 was 1.13.

The reliability of the audio-cueing intervention was established in light of the lack of changes in the use of positive specific skill feedback and percent of Management time when the first target behavior was cued.

Similarly, time spent in Management did not change appreciably when the second target behavior was intervened on. Thus, the behavioral changes that were established could be attributed to the planned intervention.

The efficiency of the intervention was established when considering the changes in level for both target behavior. This criterion is a good indicator for determining how quick the planned intervention is taking effect. These level changes were similar to those found by van der Mars (1985).

As the graph indicates, the Post-check data collected 6 months later, show the use of positive behavior feedback to have returned to the initial baseline levels. However, the teacher's use of positive specific skill feedback remained within the range of intervention levels. Explanation as to why the use of positive behavior feedback did not remain at intervention levels are speculative. It is possible that the teacher no longer saw the need to continue its use any longer in light of his students' class conduct. Furthermore, the research reported by Siedentop (1981) has shown this particular teaching skill rather insensitive to any type or combination of intervention tactics. Thus, while it may be hard to establish the effective use of this skill, it may be even more difficult to maintain its use over time.

The feasability of the intervention used was established when working with a(n) experienced teacher(s). The cost of the needed hardware is relatively low (appr. $48.00) and the time needed to develop the cuetapes need not be more than one hour. Thus, the response cost for either an outsider (i.e., the teaching researcher) or the teacher him-/herself is not terribly great in terms of developing the intervention itself. In this

study the teacher selected his own target behaviors. It would seem that, with some direction, teachers easily could increase their role in the development process by designing their own cuetapes, and then implement their own intervention.

Based on the methods and procedures used, and the resulting data of this study the following conclusions were drawn:

1. Audio-cuing as a primary intervention tactic can alter significantly the use of positive behavior feedback and positive specific skill feedback by an experienced physical education specialist.

2. Lasting effects of audio-cuing are variable across teaching behaviors.

3. Changes in teaching behaviors, selected by the teacher, can be established quickly and efficiently by way of audio-cuing.

4. Audio-cuing can alter at least two verbal teaching behaviors simultaneously.

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